United States Patent [19]

Czelen

[11] **4,036,357**

[45] **July 19, 1977**

[54] CONTACT LENS CASES

[76] Inventor: **John Cas Czelen,** 550 Whitehaven Parkway NW., Washington, D.C. 20007

[21] Appl. No.: **649,022**

[22] Filed: **Jan. 14, 1976**

[51] **Int. Cl.**[2] **A45C 11/04;** B65D 85/54

[52] **U.S. Cl.** **206/5.1;** 220/375

[58] **Field of Search** ..... 206/5.1; 215/306; 220/375, 339, 337, 85 SP

[56] **References Cited**

U.S. PATENT DOCUMENTS

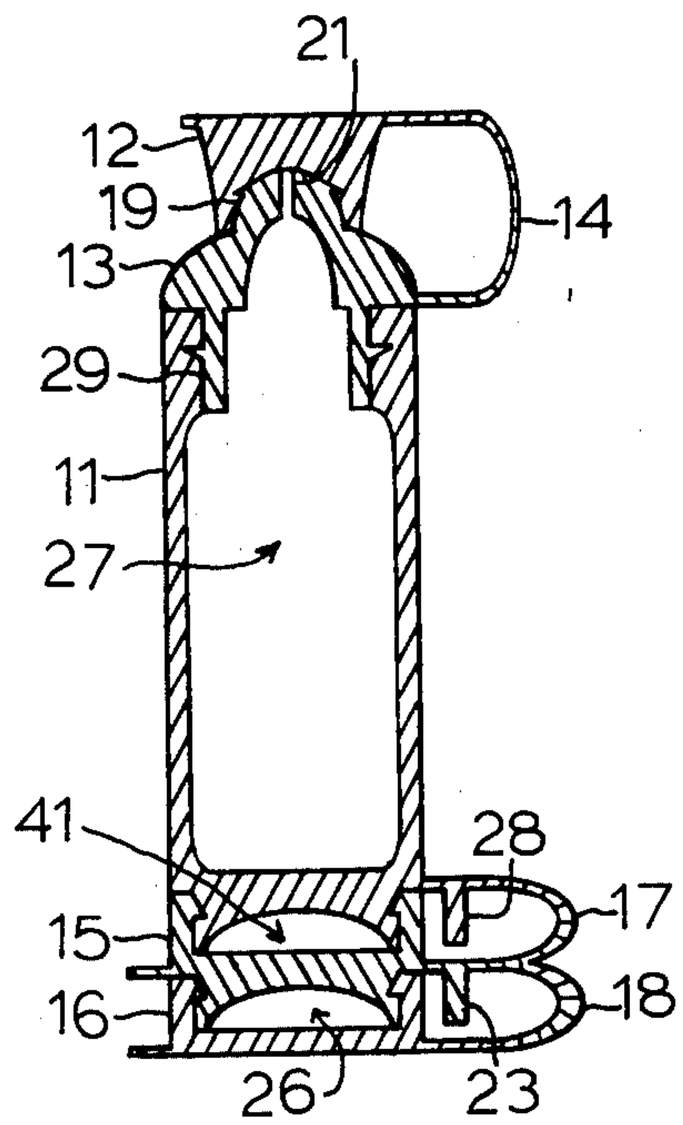
2,690,861	10/1954	Tupper	220/85 SP
2,940,589	6/1960	Silverman	206/5.1
3,326,358	6/1967	Singleton	206/5.1
3,416,688	12/1968	Fanning	215/306
3,695,280	10/1972	Sturgeon	206/5.1

Primary Examiner—William T. Dixson, Jr.

[57] **ABSTRACT**

A fluid-tight contact lens storage and carrying case of small size of polyethylene or plastic-like material, preferably clear or of translucent color, allows contact lenses to be conveniently stored when not being worn, and provides a pocket and/or hand-bag carrying and/or overnight storage case therefor, and further provides for a fluid reservoir allowing dispensing of wetting/-cleaning fluid to the contact lens prior to insertion in the eye or storage in the case. The case as normally used comprises only one functional unit, but may be disassembled for initial filling or replenishing of the fluid reservoir.

1 Claim, 9 Drawing Figures



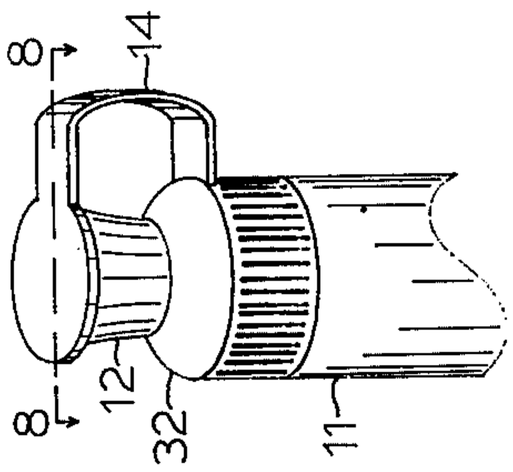


Fig.7

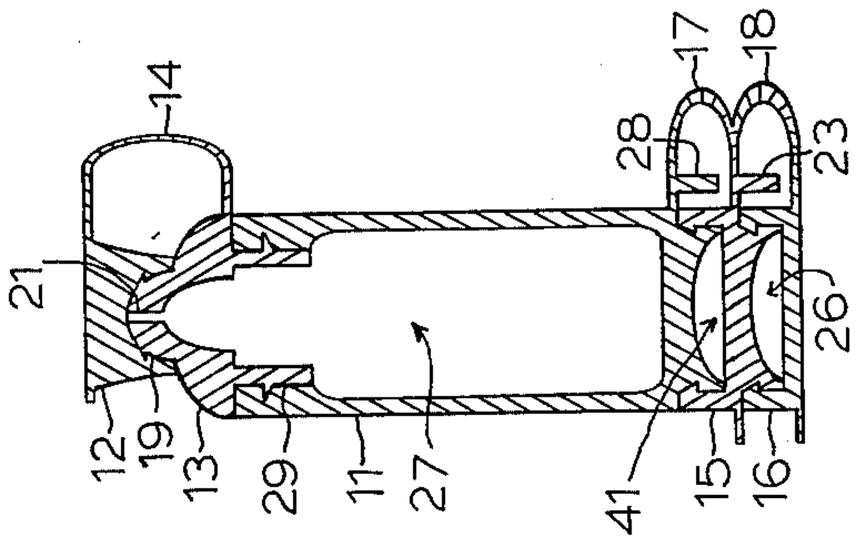


Fig.3

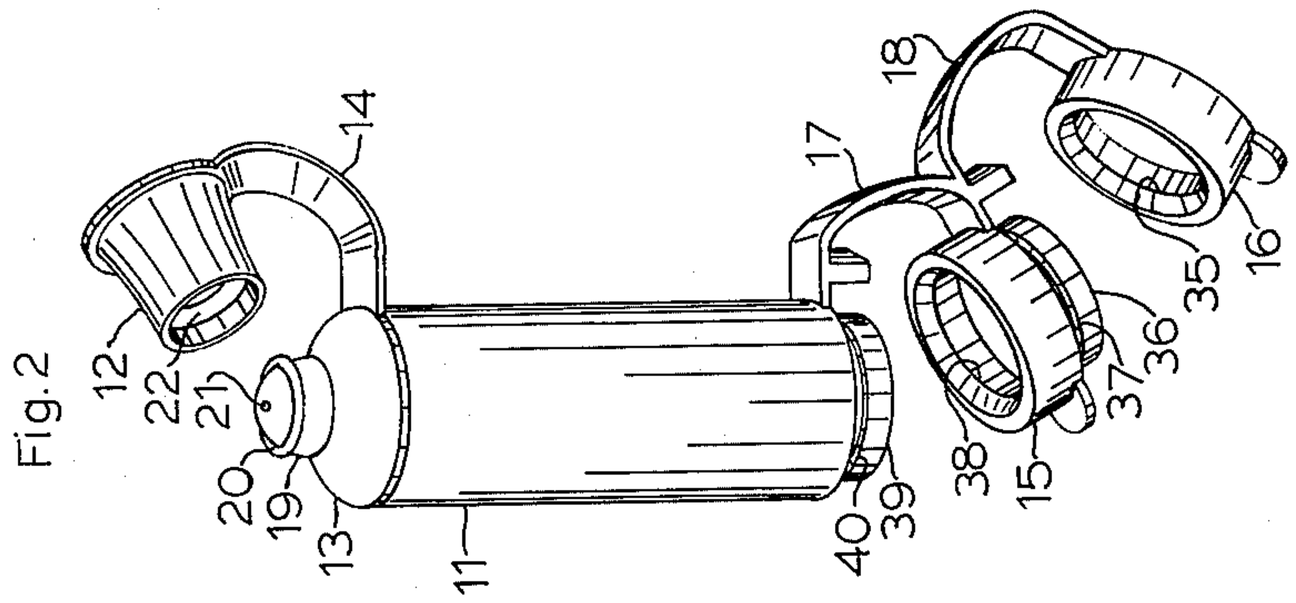


Fig.2

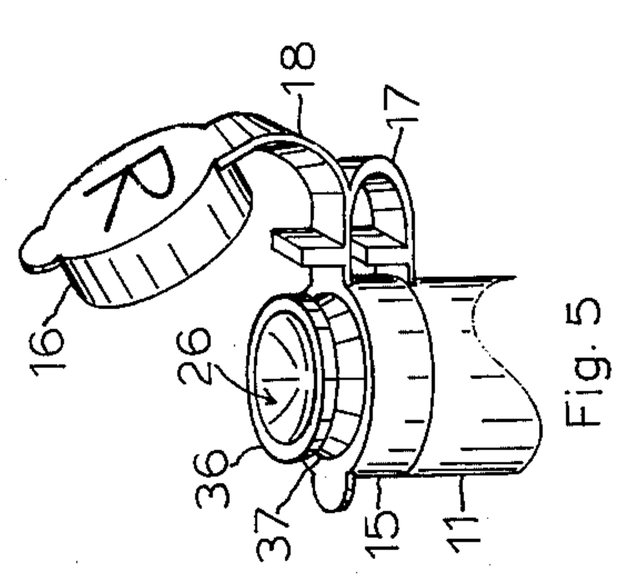


Fig.5

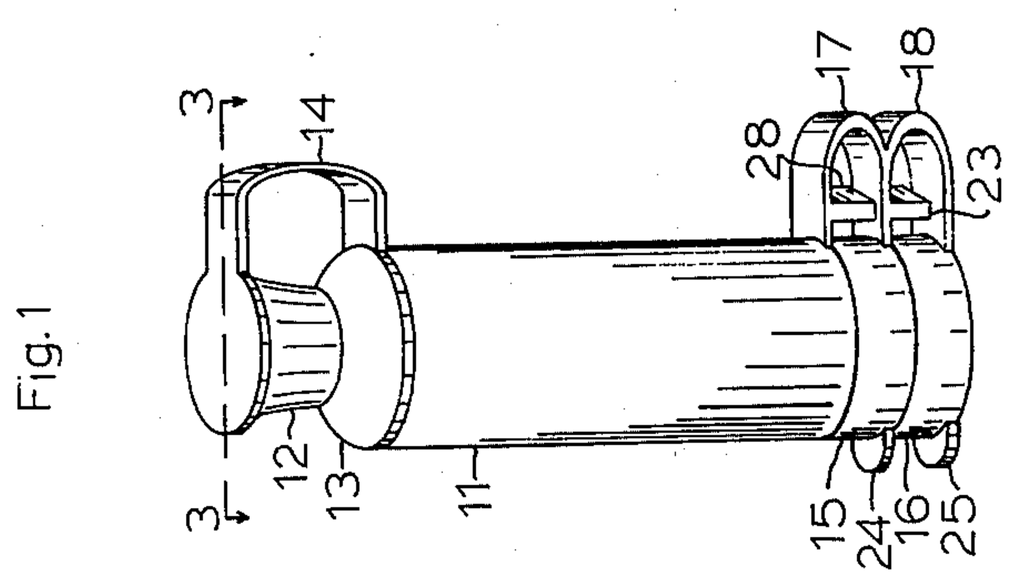


Fig.1

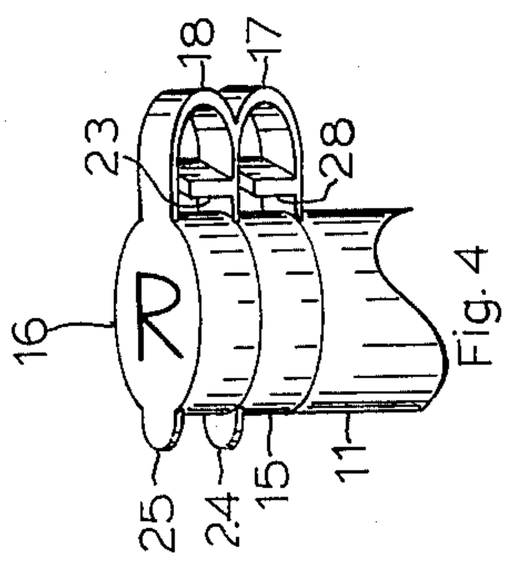


Fig.4

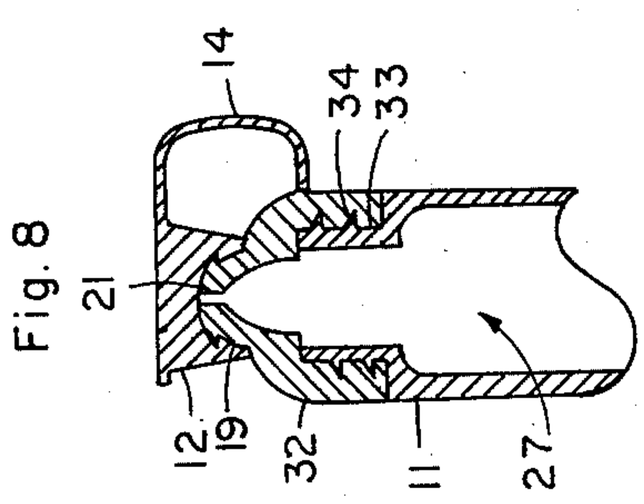


Fig.8

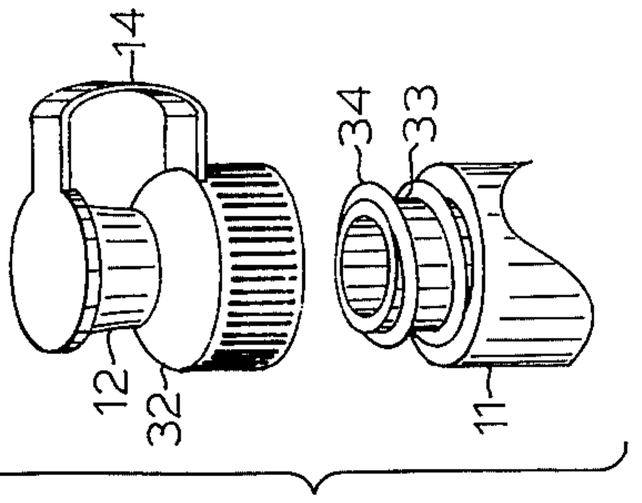


Fig.9

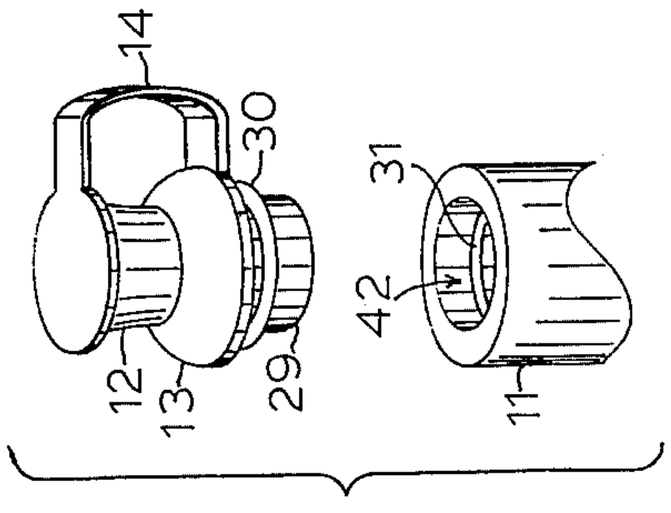


Fig.6

CONTACT LENS CASES

BACKGROUND

This invention relates to contact lens carrying cases and improvements permitting the integration of a fluid reservior with contact lens storage space, which further permits the dispensing of wetting/cleaning fluid necessary for application to a contact lens prior to insertion in the eye or prior to storage in the case.

Generally, a contact lens must be cleaned or treated with a wetting fluid prior to insertion in the eye. If dry lenses are inserted in the eye of the user, eye irritation may be caused, and in some instances, permanent damage to the eye may occur.

In the past, there have been various types of carrying cases for contact lenses. Although there have been designs incorporating both a facility for storing lenses and a means of dispensing wetting/cleaning fluid, a need exists for a compact, efficient, inexpensive design which permits convenient combined lens storage and application. Moveover, a design should have the minimum number of separable parts in order to prevent loss of any part while either using or carrying the case and to facilitate use of the device by persons with limited vision. Moveover, a design should provide that speed and ease of use by maximized.

SUMMARY

The invention provides a combination contact lens storage and carrying case and reservoir and dispenser of wetting/cleaning fluid which allows contact lenses to be conveniently stored when not being worn, and permits easy access to wetting/cleaning fluid.

The invention consists of a single cylindrical unit, composed of polyethylene or similar soft, flexible plastic, preferably clear or of translucent color. The central segment of the cylinder is hollow, providing a fluid reservoir for wetting/cleaning fluid. Attached to the upper end of the cylinder is a fluid dispensing structure, through which wetting/cleaning fluid may be dispensed by slight pressure on the side walls of the cylinder. The fluid dispensing structure is covered and protected from contamination and dirt by means of a snap-fit cap, connected to the cylinder by means of a thin flexible strap acting as a hinge.

The exterior base of the fluid reservoir segment is concavely recessed, providing space for the storage of a contact lens, parallel to the bottom end surface of the cylinder. A primary lens storage cap segment snap-fits onto the end of the cylinder, providing an enclosed storage space for a contact lens, and securing the lens therein. The primary lens storage cap is connected to the base of the cylinder by means of a thin flexible strap acting as a hinge in a similar fashion as the strap hinge of the fluid dispenser cap. The primary lens storage cap is also concavely recessed on its exterior base, providing storage space for a second lens. A secondary lens storage cap segment snap-fits onto the primary lens storage cap, providing an enclosed storage space for a second lens, and securing the lens therein. The secondary lens storage cap is connected to the primary lens storage cap by means of a thin flexible strap acting as a hinge in a similar fashion as the strap hinges of the fluid dispenser cap and primary lens storage cap.

To facilitate introduction of wetting/cleaning fluid into the interior of the fluid reservoir segment, two alternative structures are available. The first comprises a cylindrical extension on the base of the fluid dispensing structure which will snap-fit into a cylindrical fluid-tight fitting in the head of the main cylindrical fluid reservoir segment. Alternatively, the base of the fluid dispensing structure could be constructed with screw threads and could be screwed into or onto the head of the main cylindrical fluid reservoir segment, which would be compatibly threaded, and provide a fluid-tight fit. With either alternate stucture, the disassembly of the fluid dispensing structure from the fluid reservoir segment would not occur during the normal use of the contact lens storage spaces, or during the dispensing of the wetting/cleaning fluid, but would occur only when fluid need be introduced into the fluid reservoir.

These and other aspects of the invention will be more fully understood by referring to the following detailed description and accompanying drawings.

DRAWINGS

FIG. **1** shows a perspective view of the contact lens case as it is normally carried.

FIG. **2** shows a perspective view of the contact lens case with all hinged elements extended, with the fluid dispensing structure ready for dispensing and both storage sections open.

FIG. **3** shows a longitudinal cross-sectional view taken generally on line **3—3** of FIG. **1.**

FIG. **4** shows a partial perspective view from below the contact lens case.

FIG. **5** shows a partial perspective view from below the contact lens case with the secondary lens storage space open.

FIG. **6** shows an exploded partial perspective view of the snap-fit fluid dispensing structure removed from its normal position to facilitate filling of the fluid reservoir.

FIG. **7** shows a partial perspective view of an alternate fluid dispensing structure which includes a screw attachment.

FIG. **8** shows a partial longitudinal cross-sectional view taken generally on line **8—8** of FIG. **7.**

FIG. **9** shows an exploded partial perspective view of the screw-type fluid dispensing structure removed from its normal position to facilitate filling of the fluid reservoir.

DETAILED DESCRIPTION

FIGS. **1, 2,** and **3** show a combination contact lens storage and carrying case and reservoir and dispenser of wetting/cleaning fluid, of a generally cylindrical shape, approximately 2.5 inches in height, and 0.75 inches in diameter, comprised of a fluid reservoir segment **11,** a fluid reservoir **27** located within the fluid reservoir segment **11,** a fluid dispensing structure **13,** a primary lens storage cap **15,** and a secondary lens storage cap **16.**

The fluid dispensing structure **13** has appended to it a nipple structure **19,** through which a fluid channel **21** permits the fluid stored within the fluid reservoir **27** to flow out for application to a contact lens. The nipple structure **19** of the fluid dispensing structure **13** is protected by a fluid dispenser cap **12,** which is connected to the fluid dispenser structure **13** by a strap hinge **14.** A raised annulus **20** surrounds the nipple structure **19** and may engage a corresponding depressed annulus **22** in the fluid dispenser cap **12,** thus securing the fluid dispenser cap **12** to the nipple structure **19** of the fluid dispensing structure **13.** The raised annulus **20** and the fluid dispenser cap **12** are both flexible enough to permit the fluid dispenser cap **12** to be interlocked with the

nipple structure **19**, and to be placed in position on the nipple structure **19** or disengaged at will by directed pressure.

As shown in FIGS. **1** through **5**, the primary lens storage cap **15** is connected to the base of the fluid reservior segment **11** by means of a strap hinge **17**, and the secondary lens storage cap **16** is connected to the primary lens storage cap **15** by means of a strap hinge **18**. Both hinges **17** and **18** each have a transverse reinforcing rib, respectively **28** and **23**, to protect said straps from being broken or cracked by being doubled upon themselves too tightly or closely.

As shown in FIGS. **2**, **3**, and **5**, the primary lens storage cap **15** has a cylindrical extension **36**, which is concavely excavated, forming a secondary lens storage space **26**. The external circumferential base of the cylindrical extension **36** of the primary lens storage cap **15** has a depressed annulus **37** encircling it, which corresponds in size to a raised annulus **35** on the inside of the secondary lens storage cap **16**, and permits the secondary lens storage cap **16** to be interlocked with the primary lens storage cap **15**, securing and protecting the secondary lens stoages space **26**. The raised annulus **35** on the secondary lens storage cap **16** and the cylindrical extension **36** of the primary lens storage cap **15** are both flexible enough to permit the lens storage caps **15** and **16** to be interlocked or disengaged at will. The base of the fluid reservoir segment **11** has a cylindrical extension **39** which is similar to the cylindrical extension **36** of the primary lens storage cap **15**, and is also concavely excavated, forming a primary lens storage space **41**. The external circumferential base of the cylindrical extension **39** has a depressed annulus **40** which corresponds in size to a raised annulus **38** on the primary lens storage cap **15**, and permits the primary lens storage cap **15** to be interlocked with the fluid reservoir segment **11**, securing and protecting the primary lens storage space **41**, in a manner similar to the secondary lens storage space **26**. Both lens storage caps **15** and **16** have appended to each of them a protruding lip, respectively **24** and **25**, to aid disengagements of the caps from the remainder of the unit.

As shown in FIGS. **4** and **5**, the secondary lens stogage cap **16** has a letter "R" embossed or raised upon its lower external surface to designate lens storage space **26** for the contact lens for the right eye. Alternatively, an "L" could be located on that surface, or some other such visual and tactile identification indicia.

As shown in FIGS. **3** and **6**, on the base of the fluid dispensing structure **13** is appended a cylindrical extension **29** which is of outside diameter equal to the inside diameter of an opening **42** in the top of the fluid reservoir segment **11**. Thus, the fluid dispensing structure **13** can be inserted into the opening **42** of the fluid reservoir segment **11** providing a fluid-tight seal. Approximately midway on the length of the cylindrical extension **29** of the fluid dispensing structure **13** is a raised circumferential annulus **30**, which corresponds in size to a depressed annular **31** on the inside of the opening **42**, both of which interlock and prevent the fluid dispensing structure **13** from being withdrawn from the fluid reservoir segment **11** without a deliberate force, substantially greater than the force necessary to disengage the lens storage caps **15** and **16** or fluid dispenser cap **12**. Thus, after the fluid reservoir **27** is filled with wetting/cleaning fluid, the fluid dispensing structure **13** is inserted, and interlocked, providing a fluid-tight structure that would remain interlocked in normal use.

In FIGS. **7**, **8**, and **9**, a modification is shown wherein the fluid dispensing structure **13** is altered to form fluid dispensing structure **32**, which permits a threaded engagement with the fluid reservoir segment **11**. In the illustrated alternative, the fluid reservoir segment **11** has appended to it a cylindrical extension **33** which is formed with screw threads **34**. The diameter of the cylindrical extension **33** and the screw threads **34** corresponds to the inner surface of the alternative fluid dispensing structure **32**, which is internally threaded, providing for ease of disattachment of the fluid dispensing structure **32** for access to the fluid reservior **27**, while maintaining a fluid-tight seal when interlocked. Alternatively, the execution of the threaded engagement could differ, such as by appending the threaded cylindrical extension **33** to the base of the alternate fluid dispensing structure **32** and by having the internal surface of the opening **42** compatibly threaded.

I claim:

1. A contact lens case of one functional unit, there being no segments completely disattachable from the unit during normal use, constructed of a flexible, plastic-like material, comprising: a fluid reservoir of cylindrical design, a concave depression on the base of said reservior creating a primary storage space for a contact lens, a snap-fit primary lens storage cap covering the primary lens storage space, a protruding lip appended to the primary lens storage cap to aid manipulation, a strap hinge connecting said primary cap with said reservoir, a concave depression on the outer surface in the base of said primary lens storage cap creating a secondary storage space for a contact lens, a snap-fit secondary storage cap covering the secondary lens storage space, a protruding lip appended to the secondary lens storage cap to aid manipulation, a strap hinge connecting said secondary cap with the strap of the primary cap, transverse ribs on the strap hinges for the storage caps, a fluid dispensing structure on the upper end of the fluid reservoir cylinder, a snap-fit cap enclosing the fluid dispensing structure, an interlocking fit between the fluid dispensing structure and the fluid reservoir whereby the fluid dispensing structure may be releasably secured to said fluid reservoir cylinder, providing a fluid-tight seal, and separable to provide access to the fluid reservoir.

* * * * *